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FACTORS RELATED TO THE INCIDENCE OF LUNG TUBERCULOSIS

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ABSTRACT

There are 44 patients with pulmonary TB who recovered in 2021 at the Ganeas Health Center based on reporting using the cohort system so that the evaluation is carried out every quarter. For 2021 the recovery rate reached 60,3%, a decrease from the previous year, which was 64,8%. The type of research used is analytic research, with a case control study design, with a population of 117 people and the number of case samples required is 40 samples and the control sample required 40 samples. The sampling method is done by simple random sampling method. There was no relationship between the age of the patient and the cure for pulmonary tuberculosis (p-value 0,199). There is no relationship between the patient's education level and the cure for pulmonary tuberculosis (p-value 0,531). There is a relationship between the patient's knowledge and the cure for pulmonary tuberculosis (p-value 0,000). There is a relationship between the role of the supervisor taking medication with the cure for pulmonary TB (p-value 0,001), in patients with pulmonary TB in the working area of the Ganeas Health Center in 2022. It is expected that health workers will be active in efforts to improve the regularity of treatment for TB patients to increase the cure rate. And it is hoped that students of the Faculty of Health Sciences will play an active role in providing information about pulmonary tuberculosis.

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1. INTRODUCTION

Pulmonary Tuberculosis (pulmonary TB) is an infectious disease that can be transmitted, caused by the bacterium Mycobacterium tuberculosis that attacks various organs of the body, especially the lungs (Kemenkes RI, 2014). Referring to the WHO Global TB Report 2020, 10 million people in the world suffer from Tuberculosis (Tb) and 1.2 million die every year. Indonesia is one of the countries with the highest TB burden in the world with an estimated number of people falling ill due to TB reaching 845,000 with a death rate of 98,000 or equivalent to 11 deaths/hour (WHO Global Report, 2020). In 2020 Tuberculosis cases in each province varied, in the first place the highest TB cases between 244 per 100,000 population in Papua province, in the sixth place with 159 TB cases per 100,000 population in West Java province and the lowest TB cases in Bali Province with 65 per 100,000 population. 100,000 population (Indonesian Health Profile, 2020).

In Sumedang Regency in 2019 there were 729 smear positive TB cases or 59% of the 13,470 suspected cases. The discovery of all cases of TB or Case Defection Rate (CDR) All Cases found and treated in 2019 was found to be 729 and the cure rate showed 62% or around 429 people recovered. This of course has a positive value for improving services and it will be even better if the cure rate is 100%, while in Sumedang Regency the pulmonary TB cure rate is still 62%, of course this is a problem (Profile of the Sumedang Health Office, 2019).

In the working area of the Ganeas Public Health Center there were 296 target people and the discovery of suspected tuberculosis disease, but only 118 people were examined for sputum during 2021. Based on quarterly report data for the Pulmonary Tuberculosis Program at the Ganeas Health Center, the discovery of new patients with AFB (+) in 2021 was 19 cases (68 ,4%) so that the number of patients with pulmonary TB became 73 cases. Pulmonary TB patients who recovered in 2021 were 44 people based on reporting using the cohort system so that the evaluation was carried out every quarter. For 2021 the cure rate reached 60,3%, a decrease from the previous year, which was 64,8% (Profile of UPTD Ganeas Health Center, 2022).

2. METHOD

The type of research used in this research is analytical research and this research uses a quantitative approach. The design of this study used a case control study design. In this study the conceptual framework was developed, the independent variables of this study were the patient's age, the patient's education level, the patient's knowledge, the role of medication supervisor (PMO) and the dependent variable in this study was the recovery of pulmonary TB patients in the Ganeas Health Center Work Area. The case population in this study were all pulmonary TB patients who were still receiving treatment (73 people) and pulmonary TB patients who recovered at the Ganeas Health Center in 2021 (44 people). So the population in this study amounted to 117 people. The number of control samples obtained was 40 samples. The number of comparisons between the control and case groups is 1:1. So, the number of case samples required is 40 samples and the control samples required are 40 samples. So the total sample studied is 80 samples. The sampling method is done by simple random sampling method (simple random sampling). To obtain actual and objective data, researchers used data collection techniques using questionnaire research instruments.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1 Uni-variate Analysis

Table 1. Description of the Age of Pulmonary Tuberculosis Patients in the Working Area of the Ganeas Health Center

Age (years)	Total			
	Case		Control	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
12-25	4	5	1	1,3
26-45	29	36	32	39,9
46-65	7	9	7	8,8
>65	0	0	0	0
Total	40	50	40	50

From the table above, it is known that 29 patients (36%). And the number of recovered pulmonary TB patients aged 26-45 were 32 people (39,9%).

Table 2. Description of the Education Level of Pulmonary Tuberculosis Patients in the Working Area of the Ganeas Health Center

Level Education	Total			
	Case		Control	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Low	40	50	38	47,5
High	0	0	2	2,5
Total	40	50	40	50

From the table above, it is known that patients with pulmonary tuberculosis who did not recover had a low level of education as many as 40 people (100%). Meanwhile, patients with pulmonary tuberculosis who recovered had a low level of education as many as 38 people (47.5%).

Table 3. Description of Knowledge of Pulmonary Tuberculosis Patients in the Working Area of the Ganeas Health Center

Knowledge	Total			
	Case		Control	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Low	21	26,2	5	6,2
High	19	23,8	35	43,8
Total	40	50	40	50

From the table above, it is known that patients with pulmonary tuberculosis who did not recover had low knowledge of 21 people (26.2%). While patients with pulmonary TB who recovered had high knowledge as many as 35 people (43.8%).

Table 4. Role of PMOs in the Working Area of the Ganeas Health Center

Role of PMO	Total			
	Case		Control	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Yes	2	2,5	14	17,5
Not	38	47,5	26	32,5
Total	40	50	40	50

From the table above, it is known that 38 people (47.5%). Meanwhile, 26 patients (32.5%).

Table 5. Pulmonary TB Healing in the Working Area of the Ganeas Health Center

Lung Tb Healing	Frequency (f)	Percentage (%)
Recover	40	50
Not cured	40	50
Total	**80**	**100**

Based on table above, it is known that there are 40 patients with pulmonary TB who do not recover in the working area of the Ganeas Health Center (50%). And there were 40 patients with pulmonary TB who recovered at the Ganeas Health Center (50%).

3.1.2 Bivariate Analysis

Table 6. The relationship between the age of the patient and the healing of pulmonary tuberculosis in the working area of the Ganeas Health Center

Age	Pulmonary Tb Healing				Total		P-Value
	Not cured		recover				
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)	
12-25	4	5	1	1,3	5	6,3	**0,199**
26-45	29	36	32	39,9	61	75,9	
46-65	7	9	7	8,8	14	17,8	
>65	0	0	0	0	0	0	
Total	**40**	**50**	**40**	**50**	**80**	**100**	

The results of the analysis using the chi-square test obtained p value (0.199) > (0.05) so that Ha was rejected. This means that it can be seen that there is no relationship between age and cure for pulmonary tuberculosis in the working area of the Ganeas Health Center.

Table 7. The Relationship between Patient Education Level and Pulmonary Tuberculosis Recovery in the Working Area of the Ganeas Health Center

Level of Education	Pulmonary Tb Healing				Total		P-Value	OR (CI 95%)
	Not cured		recover					
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)		
Low	40	50	38	47,5	78	97,5	**0,531**	**3.500** (1.529-8.012)
High	0	0	2	2,5	2	2,5		
Total	**40**	**50**	**40**	**50**	**80**	**100**		

The results of the analysis using the chi-square test obtained p value (0.531) > (0.05) so that Ha was rejected. This means that it can be seen that there is no relationship between the level of education and the cure for pulmonary tuberculosis in the working area of the Ganeas Health Center. Calculation of the Risk Estimate obtained OR = 3,500 (OR> 1) with an interval of 1,529-8,012, this means that respondents who have a high level of education have 3,500 times the chance to recover, compared to respondents who have a low level of education.

Table 8. The Relationship Knowledge of Patients with Pulmonary Tuberculosis Healing in the Working Area of the Ganeas Health Center

Knowledge	Pulmonary Tb Healing				Total		P-Value	OR (CI 95%)
	Not cured		recover					
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)		
Low	21	26,2	5	6,2	26	32,4	**0,000**	**7.737** (2.515-24.805)
High	19	23,8	35	43,8	54	67,6		
Total	**40**	**50**	**40**	**50**	**80**	**100**		

The results of the chi-square analysis obtained p value (0.000) < (0.05) so that Ha is accepted. This means that it can be seen that there is a relationship between knowledge and cure for pulmonary TB in the working area of the Ganeas Health Center. Calculation of the Estimated Risk obtained OR = 7,737 (OR> 1) with an interval of 2,515-24,805, this means that respondents who have knowledge with a high score have a chance of 7,737 times to recover, compared to respondents who have knowledge with a low score.

Table 9. The relationship between the role of PMO and the healing of pulmonary tuberculosis in the working area of the Ganeas Health Center

Role of PMO	Pulmonary Tb Healing				Total		P-Value	OR (CI 95%)
	Not cured		recover					
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)		
Yes	2	2,5	14	17,5	16	20	**0,001**	**10.231** (2.143-48.848)
No	38	47,5	26	32,5	64	80		
Total	**40**	**50**	**40**	**50**	**80**	**100**		

The results of the chi-square analysis obtained p value (0.001) < (0.05) so that Ha is accepted. This means that it can be seen that there is a relationship between the role of PMO and the cure for pulmonary TB in the working area of the Ganeas Health Center. Estimated Risk Calculation obtained OR = 10,231 (OR> 1) with an interval of 2.143-48,848, this means that respondents who have PMO have 10.231 times the chance to recover compared to respondents who do not have PMO.

3.2. Discussion

Based on the results of the chi-square test obtained p value (0.199) > (0.05) so that Ha is rejected. This means that it can be seen that there is no relationship between age and cure for pulmonary tuberculosis in the working area of the Ganeas Health Center. From the characteristics of age, the largest number of patients with pulmonary TB who did not recover was the age classification of 26-45 years as many as 29 people (39%). In accordance with data according to data from the Indonesian Ministry of Health, the largest prevalence of TB sufferers is the population aged 15 years and over with a prevalence of 257 per 100,000 population (Kemenkes Indonesia, 2018).

This is in line with research conducted by Al Juwaini (2014) showing that age does not associated with the incidence of pulmonary TB with a p-value of 0.772. This states that the proportion of TB patients recovering does not differ in various age groups because all TB patients from various age groups will still seek treatment for their illness, but recover from the treatment they do. According to the researcher, there is no relationship between age and cure for pulmonary TB because the age gap studied is not so varied or significant so that the sample studied is only in the category of adolescents and adults.

Based on the results of the chi-square test obtained p value (0.531) > (0.05) so that Ha is rejected. This means that it can be seen that there is no relationship between the level of education and the cure for pulmonary tuberculosis in the working area of the Ganeas Health Center. Based on Skiner's theory in Notoadmojo (2015) that the healing of tuberculosis patients taking medication regularly is a real action in the

form of activities that can be influenced by factors from within the patient (internal factors) and from outside the patient (external factors). Internal factors are age, gender, education, occupation, income, knowledge, attitudes and beliefs.

This study is in line with research in 2013 in Instantbul, Turkey, and research in Sharkia, Egypt, conducted by (Babalik et al 2013) (Elkomy et al, 2013) which stated that there was no relationship between education level and TB treatment outcomes. The absence of a relationship in this study is indicated by the last education level of each respondent in general, there is no difference in obtaining treatment information. Because respondents with low levels of education can also get treatment information. According to the researcher, there is no relationship between the level of education and the cure for pulmonary TB in the working area of the Ganeas Health Center because the distribution of education levels in the village of Ganeas is not evenly distributed. In addition, although the education level of people with TB is low, it does not mean that knowledge about TB is low because they get information about TB from health workers, PMOs as well as from TV and internet media.

Based on the results of the chi-square test obtained p value (0.000) < (0.05) so that Ha is accepted. This means that it can be seen that there is a relationship between knowledge and cure for pulmonary tuberculosis in the working area of the Ganeas Health Center. Based on the research results, respondents who have knowledge with low values in the case group (not cured) are 21 respondents while in the control group (cured) respondents who have high value knowledge are 35 respondents.

This theory is also in line with research by Green in Notoadmojo (2015), that knowledge has a very close positive relationship with health behavior. According to Green, health behavior is basically a person's response (organism) to stimuli related to illness and disease, the health care system, food and the environment. In line with Al Juwaini's research (2014) from the results of the analysis of the relationship between knowledge and healing of TB patients with the chi-square test results obtained p value = 0.001 and prevalence ratio value is 1.721 (95% CI.1,200-2.469), with prevalence ratio value > 1 and the interval range does not include the number 1, meaning that the knowledge variable is a factor that influences the healing of TB patients, so it can be concluded that there is a difference in the proportion of TB patients recovering between patients with good knowledge and poor knowledge. According to researchers, knowledge is related to the cure for pulmonary TB because the better the respondent's knowledge, the better a respondent will know how to treat TB, transmit TB disease and prevent pulmonary TB disease from being infected to others.

Based on the results of the chi-square test obtained p value (0.001) < (0.05) so that Ha is accepted. This means that it can be seen that there is a relationship between the role of PMO and the cure for pulmonary tuberculosis in the working area of the Ganeas Health Center. Based on the results of the study, respondents who did not have PMO in the case group (not cured) were 38 respondents while in the control group (cured) who had PMO were 14 people. These results prove Langevelt's research in Notoadmojo (2015) that supervision is closely related to the patient's education pattern, namely every effort, influence, consideration and assistance given to sufferers, which is aimed at physical and spiritual maturity.

This is in line with research (Rina Puspita Sari and Abdul Azis, 2019) with the results of the chi square statistical test with a p-value of 0.022 so it can be concluded that there is a relationship between the role of PMO patients on the recovery of pulmonary TB patients in the working area of the Mauk Health Center, Tangerang Regency in 2019. According to researchers, the role of PMO is related to the healing of pulmonary TB in the work area of the Ganeas Health Center because the role of PMO is very helpful for TB patients in monitoring drug consumption patterns, monitoring the behavior of TB patients in maintaining health and fulfilling the drug needs of TB patients. In addition, the PMO also monitors the recovery of TB patients, reminds patients if the drugs will run out and wants to take TB patients to take TB drugs to the puskesmas.

4. CONCLUSION

After conducting research and discussing the factors related to the cure for pulmonary tuberculosis in the Ganeas Health Center Working Area in 2022, it can be concluded that:

1. A total of 29 people (36%) in the case group were aged 26-45 years, and 32 people (39.9%) in the control group aged 26-45 years.

2. A total of 40 people (100%) of the case group had a low level of education. Meanwhile, 38 people (47.5%) in the control group had a low level of education.
3. A total of 21 people (26.2%) of the case group had low knowledge. Meanwhile, 35 people (43.8%) in the control group had high knowledge.
4. A total of 38 people (47.5%) in the case group did not have PMO. Meanwhile, 26 people (32.5%) did not have PMO.
5. A total of 40 people (50%) group of cases in the working area of the Ganeas Health Center. And as many as 40 people (50%) in the control group in the working area of the Ganeas Health Center.
6. There is no relationship between the age of the patient and the cure for pulmonary tuberculosis in the Ganeas Health Center Work Area, with a p-value of 0.199.
7. There is no relationship between the patient's education level and the cure for pulmonary TB in the Ganeas Health Center Work Area, with a p-value of 0.531.
8. There is a relationship between patient knowledge and cure for pulmonary tuberculosis in the Ganeas Health Center Work Area, with a p-value of 0.000.
9. There is a relationship between the role of the supervisor taking medication with the cure for pulmonary tuberculosis in the Ganeas Health Center Work Area, with a p-value of 0.001.

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